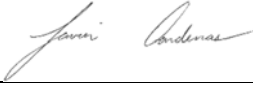


**Engineering Test Report No. 2100572-01**

Report Date	April 5, 2021	
Manufacturer Name	Roche Diabetes Care, Inc	
Manufacturer Address	9115 Hauge Rd Indianapolis, IN 46250	
Model No.	Accu-Chek Instant	
Date Received	March 26, 2021	
Test Dates	March 26, 2021 and April 5, 2021	
Specifications	FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.247 FCC "Code of Federal Regulations" Title 47, Part 15, Subpart 15B Innovation, Science, and Economic Development Canada, RSS-247 Innovation, Science, and Economic Development Canada, RSS-GEN	
Test Facility	Elite Electronic Engineering, Inc. 1516 Centre Circle, Downers Grove, IL 60515	FCC Reg. Number: 269750 IC Reg. Number: 2987A CAB Identifier: US0107
Signature		
Tested by	Javier Cardenas	
Signature		
Approved by	Raymond J. Klouda, Registered Professional Engineer of Illinois – 44894	
PO Number	4170028761	

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1. Report Revision History

Revision	Date	Description
–	8 APR 2021	Initial Release of Engineering Test Report No. etr2100572-01

2. Introduction

2.1. Scope of Tests

This document presents the results of a series of RF emissions tests that were performed on the Roche Diabetes Care, Inc Instant Blood Glucose Meter (hereinafter referred to as the Equipment Under Test (EUT)). The EUT was manufactured and submitted for testing by Roche Diabetes Care, Inc located in Indianapolis, IN.

2.2. Purpose

The test series was performed to determine if the Roche Diabetes Care, Inc Instant Blood Glucose Meter, FCC ID: WX3-122, meets the Class I Permissive Change requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.247. The following modifications have been made to the original equipment:

- Alternate PCB Manufacturer

The test series was also performed to determine if the Roche Diabetes Care, Inc Instant Blood Glucose Meter, IC 3100A-122 meets the Class I Permissive Change requirements of the Innovation, Science, and Economic Development Canada Radio Standards Specification RSS-Gen and Innovation, Science, and Economic Development Canada Radio Standards Specification RSS-247 for Transmitters. The following modifications have been made to the original equipment:

- Alternate PCB Manufacturer

Testing was performed in accordance with ANSI C63.10-2013.

2.3. Identification of the EUT

The EUT was identified as follows:

EUT Identification	
Product Description	Instant Forward Blood Glucose Meter
Model/Part No.	Accu-Chek Instant
S/N	97204874148
Device Type	Digitally Modulated Transmission Device
Band of Operation	2400-2483.5MHz
Size of EUT	77.1 x 48.6 x 15.3 mm (LWH)
Product FCC ID & IC UPN Number	FCC ID: WX3-122 ISED UPN: 3100A-122

The EUT listed above was used throughout the test series.

3. Power Input

The EUT obtained 5VDC supplied by a laptop USB port via a USB cable.

4. Grounding

The EUT was not connected to ground.

5. Support Equipment

The EUT was submitted for testing along with the following support equipment:

Description	Model #	S/N
Laptop	-	-

6. Interconnect Leads

The following interconnect cables were submitted with the test item:

Item	Description
USB Cable	Connects laptop to EUT

7. Modifications Made to the EUT

No modifications were made to the EUT during the testing.

8. Modes of Operation

The EUT and all peripheral equipment were energized. The unit was programmed to transmit in one of the following modes:

Mode	Description
Bluetooth Channel 00, 2402MHz	Power Setting = 0dBm
Bluetooth Channel 19, 2440MHz	Power Setting = 0dBm
Bluetooth Channel 39, 2480MHz	Power Setting = 0dBm

9. Test Specifications

The tests were performed to selected portions of, and in accordance with the listed test specifications.

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 15, Subpart C
- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 15, Subpart B
- ANSI C63.4-2014, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz"
- ANSI C63.10-2013, "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices"
- Federal Communications Commission Office of Engineering and Technology Laboratory Division, Guidance For Compliance Measurements On Digital Transmission Systems, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under Section 15.247 April 2, 2019 KDB 558074 D01v05r02
- RSS-247 Issue 2, February 2017, "Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices"
- RSS-Gen Issue 5, March 2019, Amendment 1, Innovation, Science, and Economic Development Canada, "Spectrum Management and Telecommunications, Radio Standards Specification, General Requirements for Compliance of Radio Apparatus"

10. Test Plan

No test plan was provided. Instructions were provided by personnel from Roche Diabetes Care, Inc and used in conjunction with the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.247 and Innovation, Science, and Economic Development Canada, RSS-247, and ANSI C63.4-2014 specifications.

11. Deviation, Additions to, or Exclusions from Test Specifications

There were no deviations, additions to, or exclusions from the test specifications during this test series.

12. Laboratory Conditions

Ambient Parameters	Value
Temperature	22°C
Relative Humidity	36%
Atmospheric Pressure	1013.6mb

13. Summary

The following EMC tests were performed and the results are shown below:

Test Description	Requirements	Test Methods	S/N	Results
Case Spurious Radiated Emissions	FCC 15C 15.247 ISED RSS-247	ANSI C63.10: 2013	97204874148	Conforms

14. Sample Calculations

For Powerline Conducted Emissions:

The resultant voltage level (VL) is a summation in decibels (dB) of the receiver meter reading (MTR) and the cable loss factor (CF).

$$\text{Formula 1: VL (dBuV) = MTR (dBuV) + CF (dB).}$$

For Radiated Emissions:

The resultant field strength (FS) is a summation in decibels (dB) of the receiver meter reading (MTR), the antenna correction factor (AF), and the cable loss factor (CF). If an external preamplifier is used, the total is reduced by its gain (-PA). If a distance correction (DC) is required, it is added to the total.

$$\text{Formula 1: FS (dBuV/m) = MTR (dBuV) + AF (dB/m) + CF (dB) + (- PA (dB)) + DC (dB)}$$

To convert the Field Strength dBuV/m term to uV/m, the dBuV/m is first divided by 20. The Base 10 AntiLog is taken of this quotient. The result is the Field Strength value in uV/m terms.

$$\text{Formula 2: FS (uV/m) = AntiLog [(FS (dBuV/m))/20]}$$

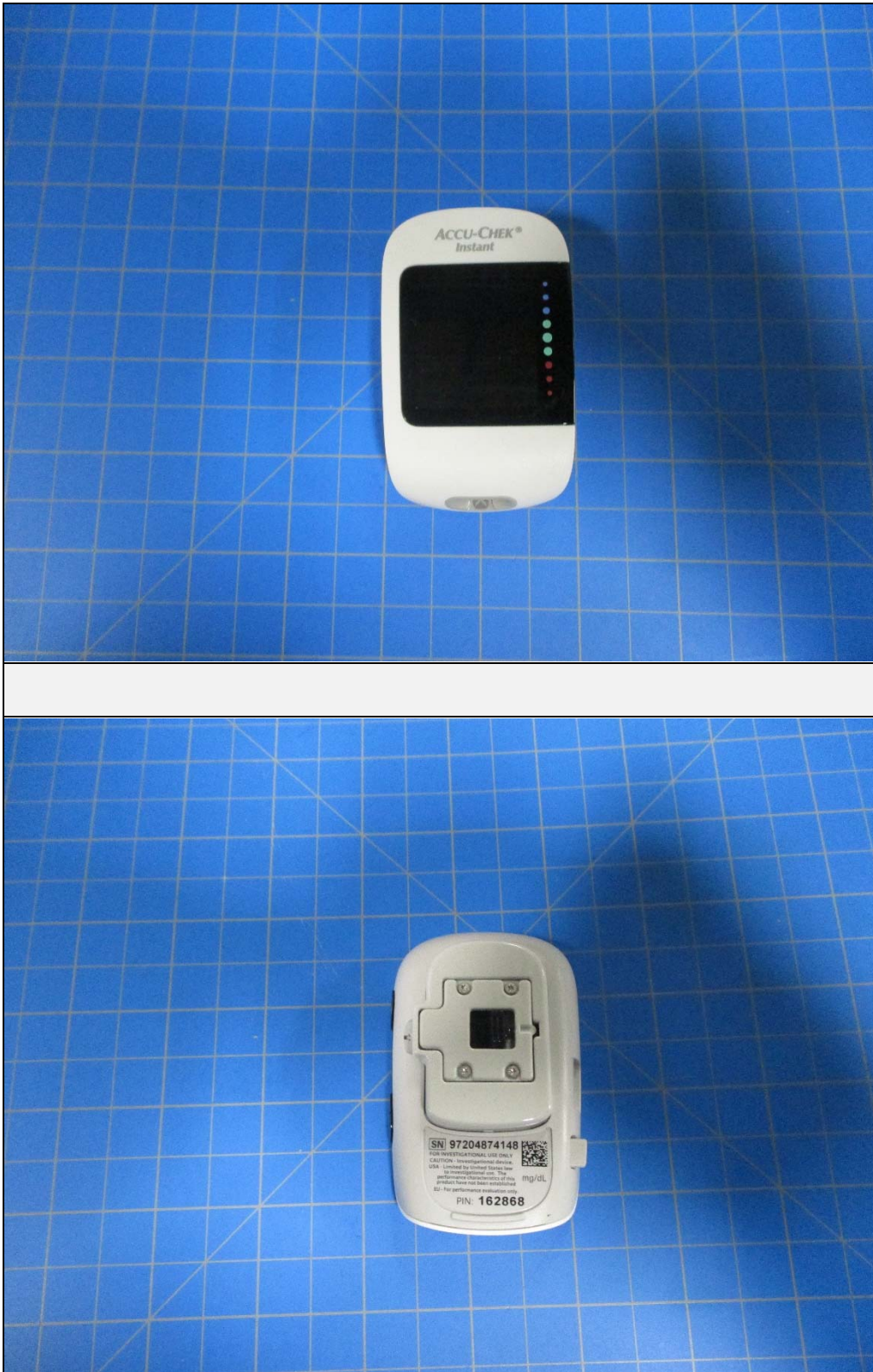
15. Statement of Conformity

The Roche Diabetes Care, Inc Instant Blood Glucose Meter, Model No. Accu-Chek Instant, Serial No. 97204874148, with parts from the Alternate PCB Manufacturer did fully conform to the selected requirements of FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.247 and Innovation, Science, and Economic Development Canada, RSS-247.

16. Certification

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.247 and Innovation, Science, and Economic Development Canada, RSS-247 test specifications. The data presented in this test report pertains to the EUT on the test date specified. Any electrical or mechanical modifications made to the EUT subsequent to the specified test date will serve to invalidate the data and void this certification.

17. Photographs of EUT



18. Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
APW1	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-30-20G20R6G-3R0-10-12-SFF	PL162015/1446	20GHZ-26.5GHZ	9/24/2020	9/24/2021
APW10	PREAMPLIFIER	PMI	PE2-35-120-5R0-10-12-SFF	PL11685/1241	1GHZ-20GHZ	3/11/2021	3/11/2022
APW3	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-35-120-5R0-10-12	PL2924	1GHZ-20GHZ	3/11/2021	3/11/2022
NHG0	STANDARD GAIN HORN ANTENNA	NARDA	638	---	18-26.5GHZ	NOTE 1	
NWQ0	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS LINDGREN	3117	66657	1GHZ-18GHZ	5/13/2020	5/13/2022
RBG3	EMI ANALYZER	ROHDE & SCHWARZ	ESW44	101592	2HZ-44GHZ	3/12/2021	3/12/2022
SES0	24VDC POWER SUPPLY	P-TRANS	FS-32024-1M	001	18-27VDC	NOTE 1	
WKA1	SOFTWARE, UNIVERSAL RCV EMI	ELITE	UNIV_RCV_EMI	1	---	I/O	
XPQ4	HIGH PASS FILTER	K&L MICROWAVE	11SH10-4800/X20000-O/O	1	4.8-20GHZ	9/6/2019	9/6/2021

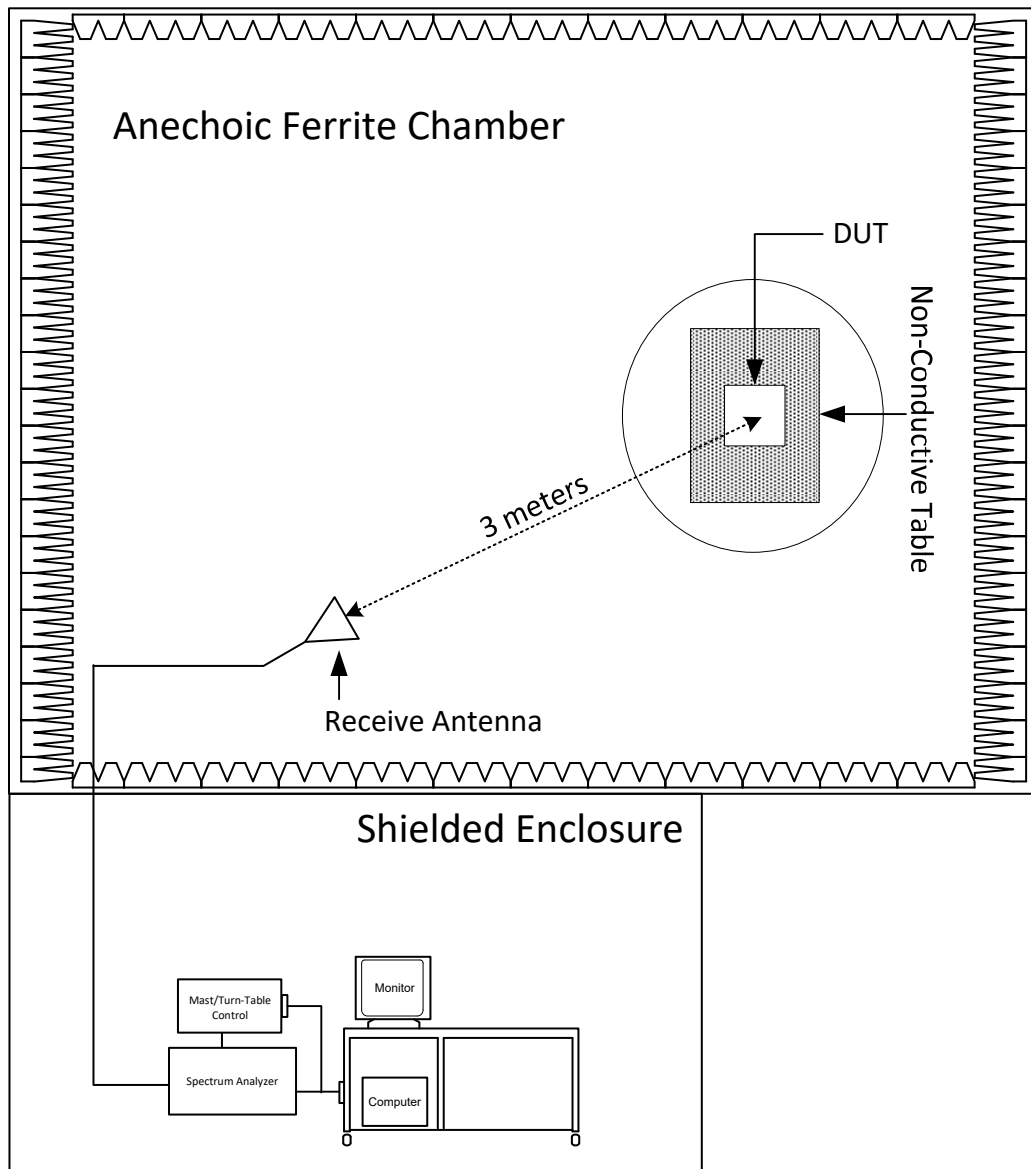
N/A: Not Applicable

I/O: Initial Only

CNR: Calibration Not Required

NOTE 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

19. Block Diagram of Test Setup



Radiated Measurements Test Setup

20. Case Spurious Radiated Emissions

Test Information	
Manufacturer	Roche Diabetes Care, Inc
Product	Instant Blood Glucose Meter
Model	Accu-Chek Instant
Serial No	97204874148
Mode	Bluetooth Tx

Test Setup Details	
Setup Format	Tabletop
Height of Support	NA
Measurement Method	Radiated
Type of Test Site	Semi-Anechoic Chamber
Test site used	Room 29
Type of Antennas Used	Below 1GHz: Bilog (or equivalent) Above 1GHz: Double-ridged waveguide (or equivalent)
Notes	The cables were manually maximized during the preliminary emissions sweeps. The cable arrangement which resulted in the worst-case emissions was utilized.

Measurement Uncertainty	
Measurement Type	Expanded Measurement Uncertainty
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1000 MHz)	4.3
Radiated disturbance (electric field strength on an open area test site or alternative test site) (1 GHz – 6 GHz)	3.1
Radiated disturbance (electric field strength on an open area test site or alternative test site) (6 GHz – 18 GHz)	3.2
Radiated disturbance (electric field strength on an open area test site or alternative test site) (18 GHz – 26.5 GHz)	3.3
Radiated disturbance (electric field strength on an open area test site or alternative test site) (26.5 GHz – 40 GHz)	3.4

Procedures
Radiated measurements were performed in a 32ft. x 20ft. x 14ft. high shielded enclosure. The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads. Preliminary radiated emissions tests were performed to determine the emission characteristics of the EUT. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the EUT. The entire frequency range from 30MHz to 25GHz was investigated using a peak detector function. The final open field emission tests were then manually performed over the frequency range of 30MHz to 25GHz. 1) For all harmonics not in the restricted bands, the following procedure was used: a) The field strength of the fundamental was measured using a double ridged waveguide antenna. The

waveguide antenna was positioned at a 3 meter distance from the EUT. The EUT was placed on a non-conductive stand. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.

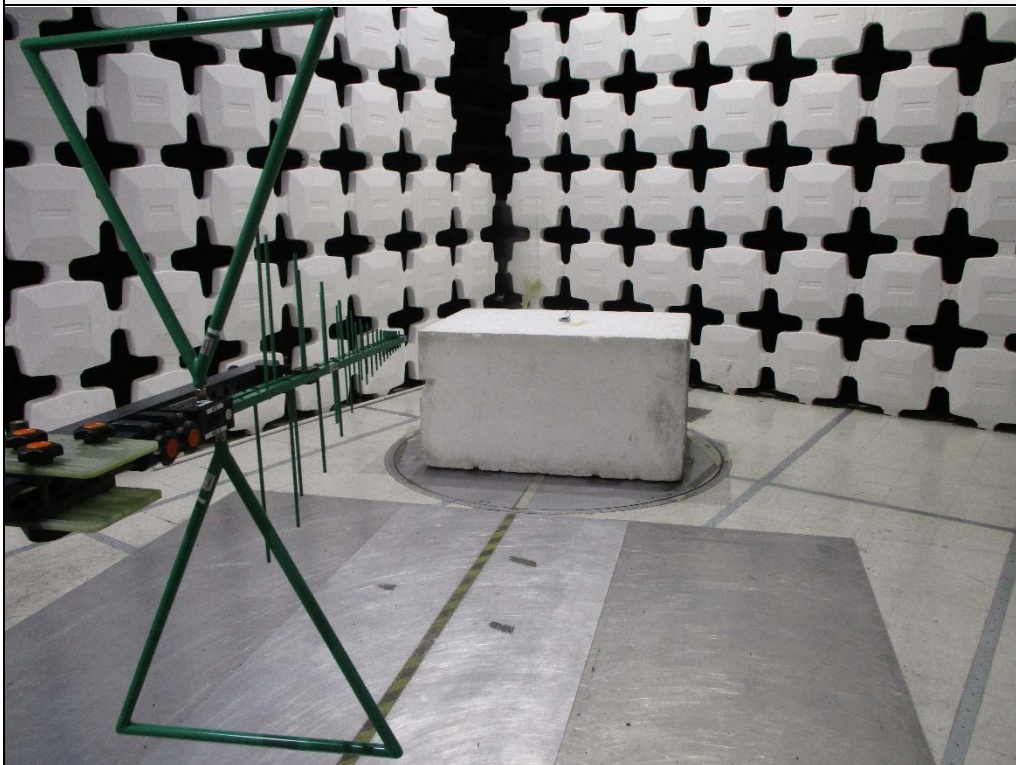
- b) The field strengths of all of the harmonics not in the restricted band were then measured using a double-ridged waveguide antenna. The waveguide antenna was positioned at a 3 meter distance from the EUT. The EUT was placed on a non-conductive stand. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.
 - c) To ensure that maximum or worst case emission levels at the fundamental and harmonics were measured, the following steps were taken when measuring the fundamental emissions and the spurious emissions:
 - i) The EUT was rotated so that all of its sides were exposed to the receiving antenna.
 - ii) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
 - iii) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.
 - iv) In instances where it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer. The measuring antenna was not raised or lowered to ensure maximized readings, instead the EUT was rotated through all axis to ensure the maximum readings were recorded for the EUT.
 - d) All harmonics not in the restricted bands must be at least 20 dB below levels measured at the fundamental. However, attenuation below the general limits specified in §15.209(a) is not required.
- 2) For all emissions in the restricted bands, the following procedure was used:
- a) The field strengths of all emissions below 1 GHz were measured using a bi-log antenna. The bi-log antenna was positioned at a 3 meter distance from the EUT. The EUT was placed on a non-conductive stand. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.
 - b) The field strengths of all emissions above 1 GHz were measured using a double-ridged waveguide antenna. The waveguide antenna was positioned at a 3 meter distance from the EUT. The EUT was placed on a non-conductive stand. A peak detector with a resolution bandwidth of 1 MHz was used on the spectrum analyzer.
 - c) To ensure that maximum or worst case emission levels were measured, the following steps were taken when taking all measurements:
 - i) The EUT was rotated so that all of its sides were exposed to the receiving antenna.
 - ii) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
 - iii) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.
 - iv) In instances where it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer. The measuring antenna was not raised or lowered to ensure maximized readings, instead the EUT was rotated through all axis to ensure the maximum readings were recorded for the EUT.
 - d) For all radiated emissions measurements below 1 GHz, if the peak reading is below the limits listed in 15.209(a), no further measurements are required. If however, the peak readings exceed the limits listed in 15.209(a), then the emissions are remeasured using a quasi-peak detector.
 - e) For all radiated emissions measurements above 1 GHz, the peak readings must comply with the 15.35(b) limits. 15.35(b) states that when average radiated emissions measurements are specified, there also is a limit on the peak level of the radiated emissions. The limit on the peak radio frequency

emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. Therefore, all peak readings above 1 GHz must be no greater than 20 dB above the limits specified in 15.209(a).

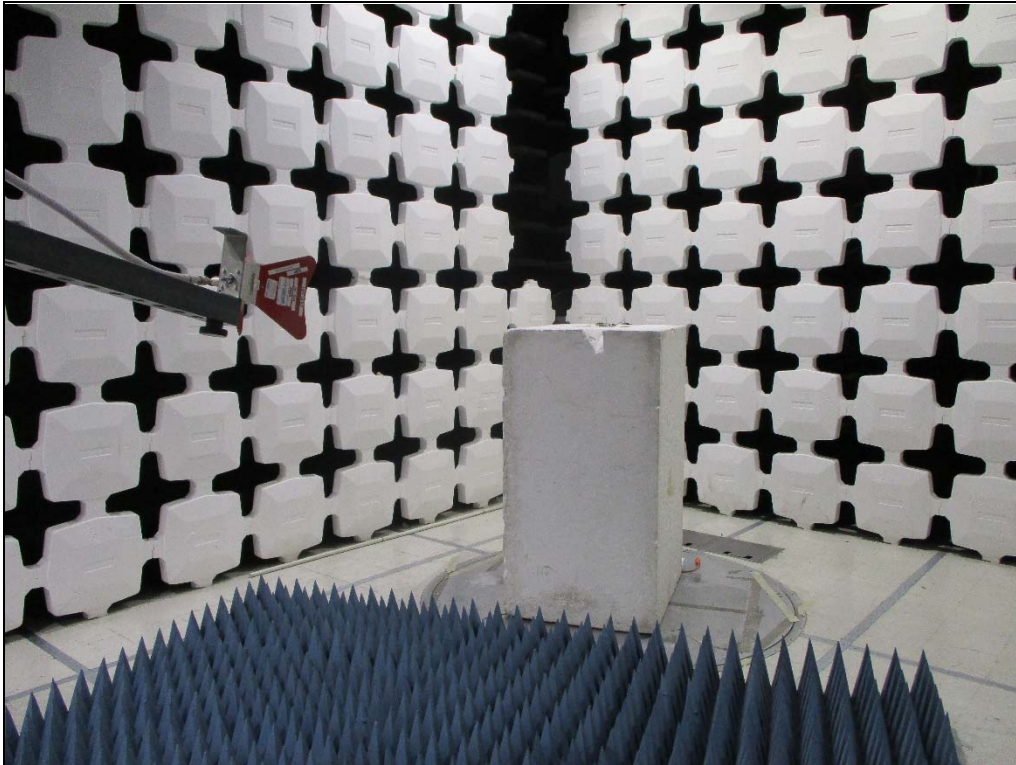
- f) Next, for all radiated emissions measurements above 1GHz, the resolution bandwidth was set to 1MHz. An average reading was taken.



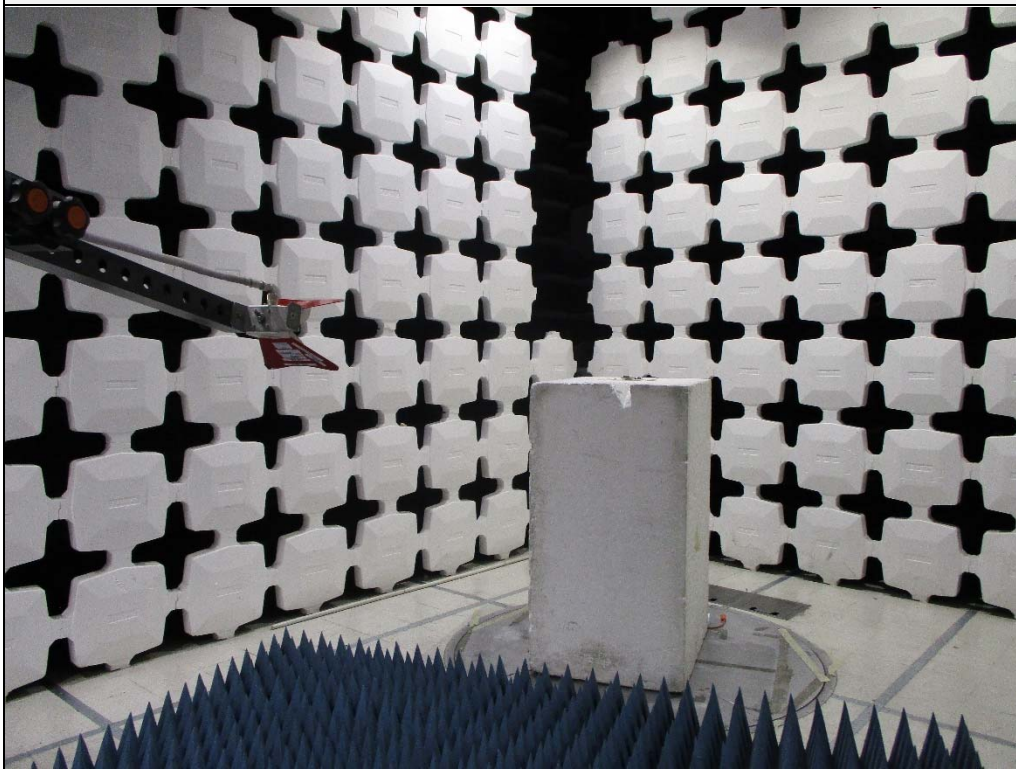
Test Setup for Spurious Radiated Emissions, 30-1000MHz – Antenna Polarization
Horizontal



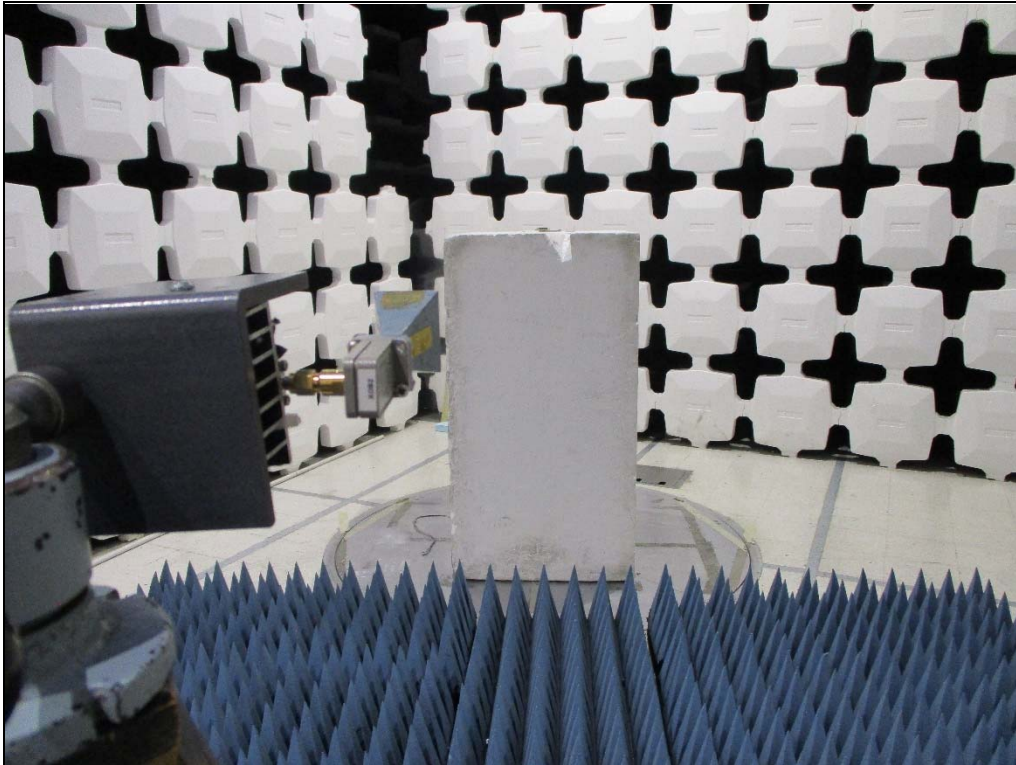
Test Setup for Spurious Radiated Emissions, 30-1000MHz – Antenna Polarization
Vertical



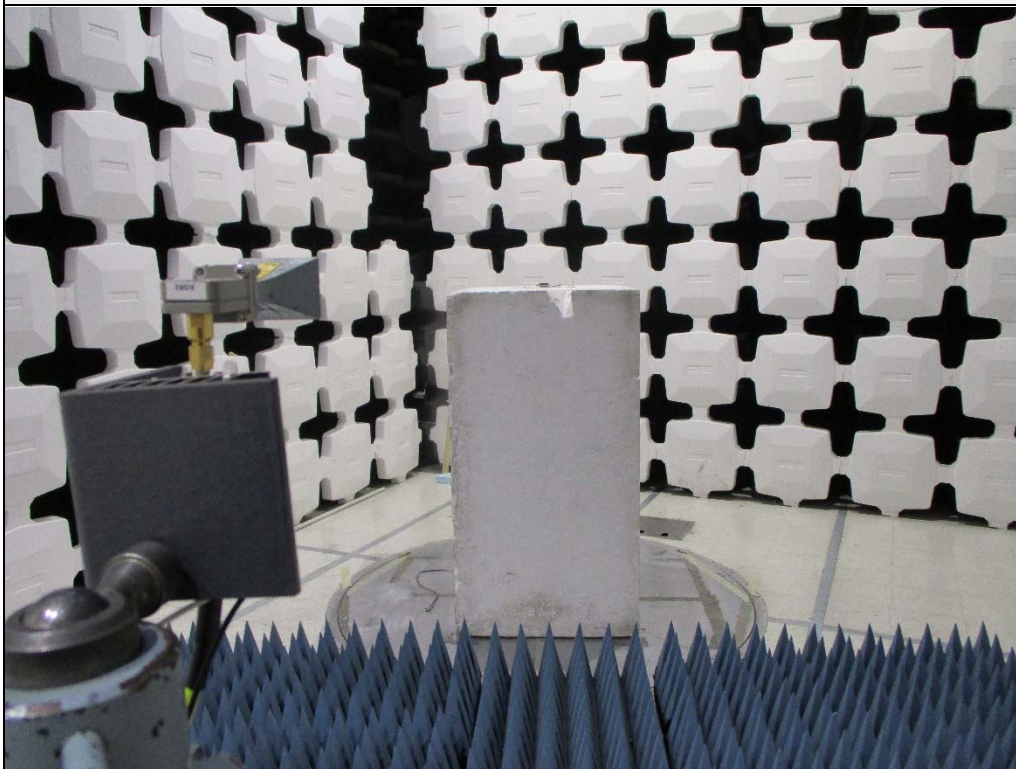
Test Setup for Spurious Radiated Emissions, 1-18GHz – Antenna Polarization Horizontal



Test Setup for Spurious Radiated Emissions, Above 1-18GHz – Antenna Polarization Vertical



Test Setup for Spurious Radiated Emissions, 18-25GHz – Antenna Polarization Horizontal



Test Setup for Spurious Radiated Emissions, Above 18-25GHz – Antenna Polarization Vertical

Test Details	
Manufacturer	Roche Diabetes Care, Inc
Model	Accu-Chek Instant
S/N	97204874148
Mode	Bluetooth Tx
Carrier Frequency	2402MHz
Parameters	Peak Measurements in the Restricted Bands
Notes	None

Frequency (MHz)	Ant Pol	Meter Reading (dBμV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBμV/m at 3m	Peak Total μV/m at 3 m	Peak Limit μV/m at 3 m	Margin (dB)
4804.00	H	52.1		3.7	36.6	-40.2	52.2	405.8	5000.0	-21.8
4804.00	V	50.7		3.7	36.6	-40.2	50.8	345.4	5000.0	-23.2
12010.00	H	49.5	*	6.1	41.5	-39.9	57.2	724.2	5000.0	-16.8
12010.00	V	49.4	*	6.1	41.5	-39.9	57.1	713.4	5000.0	-16.9
19216.00	H	31.3	*	2.2	40.4	-29.7	44.2	162.2	5000.0	-29.8
19216.00	V	31.7	*	2.2	40.4	-29.7	44.6	169.8	5000.0	-29.4

Test Details	
Manufacturer	Roche Diabetes Care, Inc
Model	Accu-Chek Instant
S/N	97204874148
Mode	Bluetooth Tx
Carrier Frequency	2402MHz
Parameters	Average Measurements in the Restricted Bands
Notes	None

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
4804.00	H	41.7		3.7	36.6	-40.2	0.0	41.7	122.1	500.0	-12.2
4804.00	V	37.9		3.7	36.6	-40.2	0.0	38.0	79.7	500.0	-16.0
12010.00	H	34.5	*	6.1	41.5	-39.9	0.0	42.1	127.7	500.0	-11.9
12010.00	V	34.5	*	6.1	41.5	-39.9	0.0	42.2	128.5	500.0	-11.8
19216.00	H	15.8	*	2.2	40.4	-29.7	0.0	28.7	27.3	500.0	-25.2
19216.00	V	16.2	*	2.2	40.4	-29.7	0.0	29.1	28.7	500.0	-24.8

Test Details	
Manufacturer	Roche Diabetes Care, Inc
Model	Accu-Chek Instant
S/N	97204874148
Mode	Bluetooth Tx
Carrier Frequency	2402MHz
Parameters	Peak Measurements not in the Restricted Bands
Notes	None

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2402.00	H	57.7		2.6	32.8	0.0	93.1	45054.3		
2402.00	V	55.8		2.6	32.8	0.0	91.2	36327.5		
7206.00	H	38.7	*	4.6	37.7	-40.3	40.8	109.6	4505.4	-32.3
7206.00	V	40.1	*	4.6	37.7	-40.3	42.1	127.7	4505.4	-30.9
9608.00	H	39.7	*	5.2	39.3	-40.3	43.9	156.4	4505.4	-29.2
9608.00	V	38.8	*	5.2	39.3	-40.3	43.1	142.4	4505.4	-30.0
14412.00	H	38.9	*	6.6	41.9	-39.6	47.9	247.2	4505.4	-25.2
14412.00	V	38.2	*	6.6	41.9	-39.6	47.2	228.3	4505.4	-25.9
16814.00	H	38.7	*	7.2	44.8	-39.2	51.5	374.6	4505.4	-21.6
16814.00	V	38.5	*	7.2	44.8	-39.2	51.3	366.1	4505.4	-21.8
21618.00	H	23.8	*	2.2	40.6	-28.7	37.9	78.4	4505.4	-35.2
21618.00	V	23.7	*	2.2	40.6	-28.7	37.8	77.5	4505.4	-35.3
24020.00	H	22.4	*	2.2	40.6	-29.2	36.1	63.6	4505.4	-37.0
24020.00	V	22.8	*	2.2	40.6	-29.2	36.5	66.9	4505.4	-36.6

Test Details	
Manufacturer	Roche Diabetes Care, Inc
Model	Accu-Chek Instant
S/N	97204874148
Mode	Bluetooth Tx
Carrier Frequency	2440MHz
Parameters	Peak Measurements in the Restricted Bands
Notes	None

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
4880.00	H	49.5	*	3.7	36.4	-40.3	49.4	294.3	5000.0	-24.6
4880.00	V	49.8	*	3.7	36.4	-40.3	49.6	303.6	5000.0	-24.3
7320.00	H	49.4	*	4.7	37.8	-40.1	51.8	390.6	5000.0	-22.1
7320.00	V	49.2	*	4.7	37.8	-40.1	51.7	384.4	5000.0	-22.3
12200.00	H	49.3	*	6.1	41.7	-39.6	57.4	744.3	5000.0	-16.5
12200.00	V	49.1	*	6.1	41.7	-39.6	57.2	728.2	5000.0	-16.7
19520.00	H	31.7	*	2.2	40.4	-29.2	45.1	179.8	5000.0	-28.9
19520.00	V	32.2	*	2.2	40.4	-29.2	45.6	189.8	5000.0	-28.4

Test Details	
Manufacturer	Roche Diabetes Care, Inc
Model	Accu-Chek Instant
S/N	97204874148
Mode	Bluetooth Tx
Carrier Frequency	2440MHz
Parameters	Average Measurements in the Restricted Bands
Notes	None

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
4880.00	H	35.5	*	3.7	36.4	-40.3	4.1	39.4	93.4	500.0	-14.6
4880.00	V	35.2	*	3.7	36.4	-40.3	4.1	39.2	91.2	500.0	-14.8
7320.00	H	34.11	*	4.7	37.8	-40.1	4.1	40.7	108.0	500.0	-13.3
7320.00	V	34.3	*	4.7	37.8	-40.1	4.1	40.9	110.3	500.0	-13.1
12200.00	H	34.3	*	6.1	41.7	-39.6	4.1	46.5	210.7	500.0	-7.5
12200.00	V	34.4	*	6.1	41.7	-39.6	4.1	46.6	213.9	500.0	-7.4
19520.00	H	15.0	*	2.2	40.4	-29.2	4.1	32.5	42.0	500.0	-21.5
19520.00	V	15.1	*	2.2	40.4	-29.2	4.1	32.6	42.7	500.0	-21.4

Test Details	
Manufacturer	Roche Diabetes Care, Inc
Model	Accu-Chek Instant
S/N	97204874148
Mode	Bluetooth Tx
Carrier Frequency	2440MHz
Parameters	Peak Measurements not in the Restricted Bands
Notes	None

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2440.00	H	59.2		2.6	33.0	0.0	94.8	55166.0		
2440.00	V	54.0		2.6	33.0	0.0	89.6	30350.9		
9760.00	H	39.0	*	5.2	39.4	-39.6	44.1	160.7	5516.6	-30.7
9760.00	V	38.8	*	5.2	39.4	-39.6	43.8	155.4	5516.6	-31.0
14640.00	H	36.2	*	6.7	42.4	-40.2	45.2	181.4	5516.6	-29.7
14640.00	V	36.5	*	6.7	42.4	-40.2	45.5	187.8	5516.6	-29.4
17080.00	H	38.6	*	7.3	44.8	-38.8	51.8	389.9	5516.6	-23.0
17080.00	V	37.8	*	7.3	44.8	-38.8	51.1	357.2	5516.6	-23.8
21960.00	H	24.9	*	2.2	40.6	-28.8	38.8	87.5	5516.6	-36.0
21960.00	V	24.9	*	2.2	40.6	-28.8	38.8	87.1	5516.6	-36.0
24400.00	H	21.9	*	2.2	40.6	-29.0	35.8	61.5	5516.6	-39.1
24400.00	V	22.8	*	2.2	40.6	-29.0	36.6	67.7	5516.6	-38.2

Test Details	
Manufacturer	Roche Diabetes Care, Inc
Model	Accu-Chek Instant
S/N	97204874148
Mode	Bluetooth Tx
Carrier Frequency	2480MHz
Parameters	Peak Measurements in the Restricted Bands
Notes	None

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
4960.00	H	51.3		3.7	36.4	-40.3	51.1	358.5	5000.0	-22.9
4960.00	V	51.1		3.7	36.4	-40.3	51.0	353.2	5000.0	-23.0
7440.00	H	48.7	*	4.7	37.8	-40.0	51.2	362.6	5000.0	-22.8
7440.00	V	48.2	*	4.7	37.8	-40.0	50.7	343.1	5000.0	-23.3
12400.00	H	48.3	*	6.1	41.8	-39.5	56.6	677.8	5000.0	-17.4
12400.00	V	49.3	*	6.1	41.8	-39.5	57.7	764.0	5000.0	-16.3
19840.00	H	32.1	*	2.2	40.4	-29.1	45.6	190.3	5000.0	-28.4
19840.00	V	33.0	*	2.2	40.4	-29.1	46.5	212.3	5000.0	-27.4
22320.00	H	32.4	*	2.2	40.6	-29.1	46.1	202.1	5000.0	-27.9
22320.00	V	31.7	*	2.2	40.6	-29.1	45.4	186.2	5000.0	-28.6

Test Details	
Manufacturer	Roche Diabetes Care, Inc
Model	Accu-Chek Instant
S/N	97204874148
Mode	Bluetooth Tx
Carrier Frequency	2480MHz
Parameters	Average Measurements in the Restricted Bands
Notes	None

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
4960.00	H	35.7		3.7	36.4	-40.3	4.1	39.6	95.7	500.0	-14.4
4960.00	V	36.3		3.7	36.4	-40.3	4.1	40.2	102.6	500.0	-13.8
7440.00	H	34.03	*	4.7	37.8	-40.0	4.1	40.6	107.8	500.0	-13.3
7440.00	V	34.1	*	4.7	37.8	-40.0	4.1	40.7	108.9	500.0	-13.2
12400.00	H	33.9	*	6.1	41.8	-39.5	4.1	46.4	208.0	500.0	-7.6
12400.00	V	33.9	*	6.1	41.8	-39.5	4.1	46.3	207.3	500.0	-7.6
19840.00	H	16.4	*	2.2	40.4	-29.1	4.1	34.0	50.2	500.0	-20.0
19840.00	V	16.5	*	2.2	40.4	-29.1	4.1	34.1	50.6	500.0	-19.9
22320.00	H	16.8	*	2.2	40.6	-29.1	4.1	34.6	53.6	500.0	-19.4
22320.00	V	17.0	*	2.2	40.6	-29.1	4.1	34.8	55.2	500.0	-19.1

Test Details	
Manufacturer	Roche Diabetes Care, Inc
Model	Accu-Chek Instant
S/N	97204874148
Mode	Bluetooth Tx
Carrier Frequency	2480MHz
Parameters	Peak Measurements not in the Restricted Bands
Notes	None

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2480.00	H	55.7		2.7	33.2	0.0	91.6	38187.1		
2480.00	V	55.5		2.7	33.2	0.0	91.4	36975.8		
9920.00	H	38.6	*	5.3	39.6	-39.5	43.9	157.2	3818.7	-27.7
9920.00	V	38.3	*	5.3	39.6	-39.5	43.6	151.3	3818.7	-28.0
14880.00	H	37.7	*	6.8	42.6	-40.4	46.7	215.9	3818.7	-25.0
14880.00	V	38.0	*	6.8	42.6	-40.4	47.0	224.3	3818.7	-24.6
17360.00	H	38.8	*	7.4	44.1	-39.1	51.1	360.8	3818.7	-20.5
17360.00	V	39.0	*	7.4	44.1	-39.1	51.4	372.6	3818.7	-20.2
24800.00	H	23.0	*	2.2	40.6	-29.5	36.3	65.6	3818.7	-35.3
24800.00	V	23.1	*	2.2	40.6	-29.5	36.5	66.5	3818.7	-35.2

21. Scope of Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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ELECTRICAL

Valid to: June 30, 2021

Certificate Number: 1786.01

In recognition of the successful completion of the A2LA Accreditation Program evaluation process, accreditation is granted to this laboratory to perform the following automotive electromagnetic compatibility and other electrical tests:

Test Technology:**Test Method(s) ¹:*****Transient Immunity***

ISO 7637-2 (including emissions); ISO 7637-3;
ISO 16750-2:2012, Sections 4.6.3 and 4.6.4;
CS-11979, Section 6.4; CS.00054, Section 5.9;
EMC-CS-2009.1 (CI220); FMC1278 (CI220, CI221, CI222);
GMW 3097, Section 3.5;
SAE J1113-11; SAE J1113-12;
ECE Regulation 10.06 Annex 10

Electrostatic Discharge (ESD)

ISO 10605 (2001, 2008);
CS-11979 Section 7.0; CS.00054, Section 5.10;
EMC-CS-2009.1 (CI 280); FMC1278 (CI280); SAE J1113-13;
GMW 3097 Section 3.6

Conducted Emissions

CISPR 25 (2002, 2008), Sections 6.2 and 6.3;
CISPR 25 (2016), Sections 6.3 and 6.4;
CS-11979, Section 5.1; CS.00054, Sections 5.6.1 and 5.6.2;
GMW 3097, Section 3.3.2;
EMC-CS-2009.1 (CE 420); FMC1278 (CE420, CE421)

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Test Technology:
Test Method(s) ¹:
Radiated Emissions Anechoic

CISPR 25 (2002, 2008), Section 6.4;
CISPR 25 (2016), Section 6.5;
CS-11979, Section 5.3; CS.00054, Section 5.6.3;
GMW 3097, Section 3.3.1;
EMC-CS-2009.1 (RE 310); FMC1278 (RE310);
ECE Regulation 10.06 Annex 7 (Broadband)
ECE Regulation 10.06 Annex 8 (Narrowband)

Vehicle Radiated Emissions

CISPR 12; ICES-002; ECE Regulation 10.06 Annex 5

Bulk Current Injection (BCI)

ISO 11452-4;
CS-11979, Section 6.1; CS.00054, Section 5.8.1;
GMW 3097, Section 3.4.1;
SAE J1113-4;
EMC-CS-2009.1 (RII12); FMC1278 (RII12);
ECE Regulation 10.06 Annex 9

***Bulk Current Injections (BCI)
(Closed Loop Method)***

ISO 11452-4; SAE J1113-4

***Radiated Immunity Anechoic
(Including Radar Pulse)***

ISO 11452-2; ISO 11452-5;
CS-11979, Section 6.2; CS.00054, Section 5.8.2;
GMW 3097, Section 3.4.2;
EMC-CS-2009.1 (RII14); FMC1278 (RII14); SAE J1113-21;
ECE Regulation 10.06 Annex 9

Radiated Immunity Magnetic Field

ISO 11452-8

Radiated Immunity Reverb

ISO/IEC 61000-4-21;
GMW 3097, Section 3.4.3;
EMC-CS-2009.1 (RII14); FMC1278 (RII14);
ISO 11452-11

***Radiated Immunity
(Portable Transmitters)***

ISO 11452-9;
EMC-CS-2009.1 (RII15); FMC1278 (RII15)

Vehicle Radiated Immunity (ALSE)

ISO 11451-2; ECE Regulation 10.06 Annex 6

Electrical Loads

ISO 16750-2, Sections 4.2, 4.3, 4.4, 4.5, 4.6, 4.7,
4.8, 4.9, 4.11, and 4.12

Dielectric Withstand Voltage

MIL-STD-202, Method 301;
EIA-364-20D

Insulation Resistance

MIL-STD-202, Method 302;
SAE/USCAR-2, Revision 6, Section 5.5.1;
EIA-364-21D

Contact Resistance

MIL-STD-202, Method 307;
SAE/USCAR-2, Revision 6, Section 5.3.1;
EIA-364-23C;
USCAR21-3 Section 4.5.3

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Test Technology:
Test Method(s) ¹:

DC Resistance

MIL-STD-202, Method 303

Contact Chatter

MIL-STD-202, Method 310;
SAE/USCAR-2, Revision 6, Section 5.1.9

Voltage Drop

SAE/USCAR-2, Revision 6, Section 5.3.2;
USCAR21-3 Section 4.5.6

Emissions

Radiated and Conducted
(3m Semi-anechoic chamber,
up to 40 GHz)

47 CFR, FCC Part 15 B (using ANSI C63.4:2014);
47 CFR, FCC Part 18 (using FCC MP-5:1986);
ICES-001; ICES-003; ICES-005;
IEC/CISPR 11, Ed. 4.1 (2004-06); AS/NZS CISPR 11 (2004);
IEC/CISPR 11 Ed 5 (2009-05) + A1 (2010);
KN 11 (2008-5) with RRL Notice No. 2008-3 (May 20, 2008);
CISPR 11; EN 55011; KN 11; CNS 13803 (1997, 2003);
CISPR 14-1; EN 55014-1; AS/NZS CISPR 14.1; KN 14-1;
IEC/CISPR 22 (1997); EN 55022 (1998) + A1(2000);
EN 55022 (1998) + A1(2000) + A2(2003); EN 55022 (2006);
IEC/CISPR 22 (2008-09); AS/NZS CISPR 22 (2004);
AS/NZS CISPR 22, 3rd Edition (2006); KN 22 (up to 6 GHz);
CNS 13438 (up to 6 GHz); VCCI V-3 (up to 6 GHz);
CISPR 32; EN 55032; KN 32; ECE Regulation 10.06 Annex 14

Current Harmonics

IEC 61000-3-2; EN 61000-3-2; KN 61000-3-2;
ECE Regulation 10.06 Annex 11

Flicker and Fluctuations

IEC 61000-3-3; EN 61000-3-3; KN 61000-3-3;
ECE Regulation 10.06 Annex 12

Immunity

Electrostatic Discharge

IEC 61000-4-2, Ed. 1.2 (2001);
IEC 61000-4-2 (1995) + A1(1998) + A2(2000);
EN 61000-4-2 (1995); EN 61000-4-2 (2009-05);
KN 61000-4-2 (2008-5); RRL Notice No. 2008-4 (May 20, 2008);
IEC 61000-4-2; EN 61000-4-2; KN 61000-4-2;
IEEE C37.90.3 2001

Radiated Immunity

IEC 61000-4-3 (1995) + A1(1998) + A2(2000);
IEC 61000-4-3, Ed. 3.0 (2006-02);
IEC 61000-4-3, Ed. 3.2 (2010);
KN 61000-4-3 (2008-5); RRL Notice No. 2008-4 (May 20, 2008);
IEC 61000-4-3; EN 61000-4-3; KN 61000-4-3;
IEEE C37.90.2 2004

Electrical Fast Transient/Burst

IEC 61000-4-4, Ed. 2.0 (2004-07); IEC 61000-4-4, Ed. 2.1 (2011);
IEC 61000-4-4 (1995) + A1(2000) + A2(2001);
KN 61000-4-4 (2008-5); RRL Notice No. 2008-5 (May 20, 2008);
IEC 61000-4-4; EN 61000-4-4; KN 61000-4-4;
ECE Regulation 10.06 Annex 15

Test Technology:
Test Method(s) ¹:
Immunity (cont'd)
Surge

IEC 61000-4-5 (1995) + A1(2000);
IEC 61000-4-5, Ed 1.1 (2005-11);
EN 61000-4-5 (1995) + A1(2001);
KN 61000-4-5 (2008-5); RRL Notice No. 2008-4 (May 20, 2008);
IEC 61000-4-5; EN 61000-4-5; KN 61000-4-5;
IEEE C37.90.1 2012; IEEE STD C62.41.2 2002;
ECE Regulation 10.06 Annex 16

Conducted Immunity

IEC 61000-4-6 (1996) + A1(2000);
IEC 61000-4-6, Ed 2.0 (2006-05);
IEC 61000-4-6 Ed. 3.0 (2008);
KN 61000-4-6 (2008-5); RRL Notice No. 2008-4 (May 20, 2008);
EN 61000-4-6 (1996) + A1(2001); IEC 61000-4-6; EN 61000-4-6;
KN 61000-4-6

Power Frequency Magnetic Field Immunity

IEC 61000-4-8 (1993) + A1(2000); IEC 61000-4-8 (2009);
EN 61000-4-8 (1994) + A1(2000);
KN 61000-4-8 (2008-5); RRL Notice No. 2008-4 (May 20, 2008);
IEC 61000-4-8; EN 61000-4-8; KN 61000-4-8

Voltage Dips, Short Interrupts, and Line Voltage Variations

IEC 61000-4-11, Ed. 2 (2004-03);
KN 61000-4-11 (2008-5);
RRL Notice No. 2008-4 (May 20, 2008);
IEC 61000-4-11; EN 61000-4-11; KN 61000-4-11

Ring Wave

IEC 61000-4-12, Ed. 2 (2006-09);
EN 61000-4-12:2006;
IEC 61000-4-12; EN 61000-4-12; KN 61000-4-12;
IEEE STD C62.41.2 2002

Generic and Product Specific EMC Standards

IEC/EN 61000-6-1; AS/NZS 61000-6-1; KN 61000-6-1;
IEC/EN 61000-6-2; AS/NZS 61000-6-2; KN 61000-6-2;
IEC/EN 61000-6-3; AS/NZS 61000-6-3; KN 61000-6-3;
IEC/EN 61000-6-4; AS/NZS 61000-6-4; KN 61000-6-4;
EN 50130-4; EN 61326-1;
IEC/CISPR 14-2; EN 55014-2; AS/NZS CISPR 14.2; KN 14-2;
IEC/CISPR 24; AS/NZS CISPR 24; EN 55024; KN 24;
IEC 60601-1-2; JIS T0601-1-2

TxRx EMC Requirements

EN 301 489-1; EN 301 489-3; EN 301 489-9; EN 301 489-17;
EN 301 489-19

European Radio Test Standards

ETSI EN 300 086-1; ETSI EN 300 086-2;
ETSI EN 300 113-1; ETSI EN 300 113-2;
ETSI EN 300 220-1; ETSI EN 300 220-2;
ETSI EN 300 330-1; ETSI EN 300 330-2;
ETSI EN 300 440-1; ETSI EN 300 440-2;
ETSI EN 300 422-1; ETSI EN 300 422-2;

Test Technology:
Test Method(s) ¹:

*European Radio Test Standards
(cont'd)*

ETSI EN 300 328; ETSI EN 301 893;
ETSI EN 301 511; ETSI EN 301 908-1;
ETSI EN 908-2; ETSI EN 908-13;
ETSI EN 303 413; ETSI EN 302 502

Canadian Radio Tests

RSS-102 (RF Exposure Evaluation only); RSS-111; RSS-112;
RSS-117; RSS-119; RSS-123; RSS-125; RSS-127; RSS-130;
RSS-131; RSS-132; RSS-133; RSS-134; RSS-135; RSS-137;
RSS-139; RSS-140; RSS-141; RSS-142; RSS-170; RSS-181;
RSS-182; RSS-191; RSS-192; RSS-194; RSS-195; RSS-196;
RSS-197; RSS-199; RSS-210; RSS-211; RSS-213; RSS-215;
RSS-216; RSS-220; RSS-222; RSS-236; RSS-238; RSS-243;
RSS-244; RSS-247; RSS-251; RSS-252; RSS-287;
RSS-288; RSS-310; RSS-GEN

Mexico Radio Tests

IFT-008-2015; NOM-208-SCFI-2016

Japan Radio Tests

Radio Law No. 131, Ordinance of MPT No. 37, 1981,
MIC Notification No. 88:2004, Table No. 22-11;
ARIB STD-T66, Regulation 18

Taiwan Radio Tests

LP-0002

Australia/New Zealand Radio Tests

AS/NZS 4268; Radiocommunications (Short Range Devices)
Standard (2014)

Hong Kong Radio Tests

HKCA 1039 Issue 6; HKCA 1042; HKCA 1033 Issue 7;
HKCA 1061; HKCA 1008; HKCA 1043; HKCA 1057;
HKCA 1073

Korean Radio Test Standards

KN 301 489-1; KN 301 489-3; KN 301 489-9; KN 301 489-17;
KN 301 489-52

*Unlicensed Radio Frequency Devices
(3 Meter Semi-Anechoic Room)*

47 CFR FCC Part 15C, 15D, 15E, 15F, 15G, 15H
(using ANSI C63.10:2013, ANSI C63.17:2013 and
FCC KDB 905462 D02 (v02))

Licensed Radio Service Equipment

47 CFR FCC Parts 20, 22, 24, 25, 27, 30, 73, 74, 80, 87,
90, 95, 96, 97, 101;
ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015;

OTA (Over the Air) Performance

GSM, GPRS, EGPRS
UMTS (W-CDMA)
LTE including CAT M1
A-GPS for UMTS/GSM
LTS A-GPS, A-GLONASS,
SIB8/SIB16
Large Device/Laptop/Tablet Testing
Integrated Device Testing
WiFi 802.11 a/b/g/n/a

CTIA Test Plan for Wireless Device Over-the-Air Performance
(Method for Measurement for Radiated Power and Receiver
Performance) V3.8.2;
CTIA Test Plan for RF Performance Evaluation of WiFi Mobile
Converged Devices V2.1.0

Test Technology:
Test Method(s) ¹:
Electrical Measurements and Simulation
AC Voltage / Current

(1mV to 5kV) 60 Hz

(0.1V to 250V) up to 500 MHz

(1μA to 150A) 60 Hz

DC Voltage / Current

(1mV to 15-kV) / (1μA to 10A)

Power Factor / Efficiency / Crest Factor

(Power to 30kW)

Resistance

(1mΩ to 4000MΩ)

Surge

(Up to 10 kV / 5 kA) (Combination Wave and Ring Wave)

FAA AC 150/5345-10H

FAA AC 150/5345-43J

FAA AC 150/5345-44K

FAA AC 150/5345-46E

FAA AC 150/5345-47C

FAA EB 67D

On the following products and materials:

Telecommunications Terminal Equipment (TTE), Radio Equipment, Network Equipment, Information Technology Equipment (ITE), Automotive Electronic Equipment, Automotive Hybrid Electronic Devices, Maritime Navigation and Radio Communication Equipment and Systems, Vehicles, Boats and Internal Combustion Engine Driven Devices, Automotive, Aviation, and General Lighting Products, Medical Electrical Equipment, Motors, Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment, Household Appliances, Electric Tools, Low-voltage Switchgear and Control gear, Programmable Controllers, Electrical Equipment for Measurement, Control and Laboratory Use, Base Materials, Power and Data Transmission Cables and Connectors

¹ When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is expected to be using the current version within one year of the date of publication, per part C., Section 1 of A2LA R101 - *General Requirements - Accreditation of ISO-IEC 17025 Laboratories*.

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1²

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
<u>Unintentional Radiators</u>		
Part 15B	ANSI C63.4:2014	40000
<u>Industrial, Scientific, and Medical Equipment</u>		
Part 18	FCC MP-5 (February 1986)	40000
<u>Intentional Radiators</u>		
Part 15C	ANSI C63.10:2013	40000
<u>Unlicensed Personal Communication Systems Devices</u>		
Part 15D	ANSI C63.17:2013	40000

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1²

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
<u>U-NII without DFS Intentional Radiators</u> Part 15E	ANSI C63.10:2013	40000
<u>U-NII with DFS Intentional Radiators</u> Part 15E	FCC KDB 905462 D02 (v02)	40000
<u>UWB Intentional Radiators</u> Part 15F	ANSI C63.10:2013	40000
<u>BPL Intentional Radiators</u> Part 15G	ANSI C63.10:2013	40000
<u>White Space Device Intentional Radiators</u> Part 15H	ANSI C63.10:2013	40000
<u>Commercial Mobile Services (FCC Licensed Radio Service Equipment)</u> Parts 22 (cellular), 24, 25 (below 3 GHz), and 27	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
<u>General Mobile Radio Services (FCC Licensed Radio Service Equipment)</u> Parts 22 (non-cellular), 90 (below 3 GHz), 95, 97, and 101 (below 3 GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
<u>Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment)</u> Part 96	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
<u>Maritime and Aviation Radio Services</u> Parts 80 and 87	ANSI/TIA-603-E; ANSI C63.26:2015	40000
<u>Microwave and Millimeter Bands Radio Services</u> Parts 25, 30, 74, 90 (above 3 GHz), 97 (above 3 GHz), and 101	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
<u>Broadcast Radio Services</u> Parts 73 and 74 (below 3 GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1²

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
<u>Signal Boosters</u> Part 20 (Wideband Consumer Signal Boosters, Provider-specific signal boosters, and Industrial Signal Boosters) Section 90.219	ANSI C63.26:2015	40000

²Accreditation does not imply acceptance to the FCC equipment authorization program. Please see the FCC website (<https://apps.fcc.gov/oetcf/eas/>) for a listing of FCC approved laboratories.



Accredited Laboratory

A2LA has accredited

ELITE ELECTRONIC ENGINEERING INC.

Downers Grove, IL

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 8th day of August 2019.



Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1786.01
Valid to June 30, 2021

For the tests to which this accreditation applies, please refer to the laboratory's *Electrical Scope of Accreditation*.